

Draft

Environmental Impact Report

for the

Tehachapi East Afterbay Project

SCH# 2004061133



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**California Department of Water Resources
TEHACHAPI EAST AFTERBAY PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT**

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Executive Summary

This section provides an overview of the proposed project and its objectives, and summarizes the potential impacts anticipated as a result of project implementation. A summary table identifies these impacts and lists the proposed mitigation measures to reduce significant adverse impacts. The alternatives considered in the Draft Environmental Impact Report (EIR) are also briefly described. For a full description of the proposed project, its impacts, and alternatives, the reader is referred to Sections 2, 3, 4, and 5 of the EIR. The mitigation monitoring plan for the proposed project is provided in Section 6 of the EIR.

ES.1 Project Overview

The California Department of Water Resources (CDWR) proposes to construct a reservoir east of the bifurcation of the East Branch and West Branch of the California Aqueduct in southern Kern County; nine miles east of Gorman, California (see Figures 2-1 and 2-2 in Section 2 – Project Description). The Tehachapi East Afterbay project (proposed project) would provide additional storage to the existing Tehachapi Afterbay (Pool 42). This additional storage would allow downstream facilities on the East Branch, and to a lesser extent, the West Branch, to operate for short periods without relying on the pumping operations of the Valley String Pumping Plants (Dos Amigos, Buena Vista, Teerink, Chrisman, and A.D. Edmonston), thereby reducing pumping during peak electrical demand periods and providing increased operational flexibility. Pumping could then be shifted from expensive, peak periods of power demand to off-peak periods when power rates are lower, resulting in cost savings and the statewide benefit of more efficient and stable energy consumption. The ability to shift to off-peak pumping is, however, often limited by a lack of regulatory storage and the need to maintain flow rates in the East Branch of the California Aqueduct. However, the proposed project would not result in increased Delta diversions or increased deliveries to State Water Project contractors, nor would it appreciably affect the timing of these deliveries.

Construction activities for the Tehachapi East Afterbay (East Afterbay) would occur over a 17-month period as estimated from the most recent project design information, and is tentatively scheduled for February 2005 to June 2006. The proposed project would consist of a reservoir (afterbay) with a water surface area that would cover approximately 71 acres, based on the normal maximum water surface elevation (of 3,100 feet), and have a gross storage capacity of approximately 1,159 acre-feet (AF) (see Figures 2-3 and 2-4 in Section 2 – Project Description). Virtually the entire reservoir pool would be constructed in excavation.

As a result of the proposed project, flow to the West Branch would remain relatively unchanged. Flow to the East Branch, which currently is routed through the existing Tehachapi Afterbay to Cottonwood Chutes or Alamo Powerplant, would diverge from the existing Tehachapi Afterbay into the East Afterbay via a new inlet channel designed to convey flows up to approximately 3,150 cubic feet per second (cfs). Water would then discharge from the East Afterbay into the Alamo headworks and/or Cottonwood Chutes (see Figure 2-3 in Section 2 – Project Description) via a new outlet channel. A new bypass around Alamo Powerplant and Cottonwood Chutes, which connects to Cottonwood Canal, would provide a third conveyance to the East Branch.

ES.2 Project Objectives

The Tehachapi East Afterbay Project has been proposed with the basic objective of shifting the pumping load of the Valley String Pumping Plants from peak (high demand) periods to off-peak (low demand) periods. The additional storage provided by the East Afterbay would allow downstream facilities on the West Branch and East Branch of the California Aqueduct to continue operations for short periods at full capacity without relying on the pumping operations of the Valley String Pumping Plants. The primary project benefits are reduced pumping costs, increased operational flexibility and system reliability, and the statewide benefit of more efficient and stable energy consumption.

The primary objectives of the proposed project are summarized as follows:

- Provide additional operational storage for the Valley String Pumping Plants.
- Provide State Water Project operators additional operational flexibility for the Valley String Pumping Plants, while avoiding increased operational complexity.
- Reduce expensive pumping at the Valley String Pumping Plants during on-peak periods.

ES.3 Areas of Controversy

The proposed project would be located in an unincorporated portion of Kern County, within the boundaries of Tejon Ranch. As part of the California Environmental Quality Act (CEQA) process, the CDWR has consulted with the Tejon Ranch Company and all responsible and trustee agencies. No controversy has been identified with the proposed project.

ES.4 Issues to be Resolved

As described in Section 2 (Project Description) of this EIR, the CDWR may need to utilize a supplemental spoil pile at a site located west of the existing natural drainage channel. Although the CDWR has not yet determined if the supplemental spoil pile will be needed during project construction, the impacts of its potential use have been assessed in this EIR. Where possible, the impacts associated with the use of the supplemental spoil pile have been identified separately within the analysis to allow the reader to understand the impacts of the project with and without the use of the supplemental spoil pile. The proposed mitigation measures presented in this EIR would avoid or reduce the significant impacts of the proposed project, with or without the supplemental spoil pile, to the extent feasible. No other unresolved environmental issues remain.

ES.5 Alternatives to the Project

Since the early 1970s, the CDWR has been investigating both on- and off-aqueduct alternatives to provide additional storage downstream of the Edmonston Pumping Plant. Several studies were performed, and based on that work six potential alternatives were developed in greater detail to analyze the feasibility and associated environmental impacts of each. However, for the purposes of the environmental analysis contained within the EIR, the majority of the potential alternatives developed through the feasibility studies were not considered to be reasonable alternatives, as they were found to be technically infeasible or did not have the potential to avoid or substantially reduce significant impacts below those associated with the proposed project.

After evaluating the feasibility of the potential alternatives, the CDWR decided to study the 1,000-AF Tehachapi Afterbay Enlargement option in greater depth, and developed the Tehachapi Second Afterbay (T2A) Project. A Notice of Preparation and an Initial Study were completed for the T2A Project; however, based on more detailed engineering design investigations, costs associated with project construction escalated, and the CDWR decided to redesign the T2A Project and move it to a new location northeast of the East Branch, which is the current site of the proposed project. Following the relocation of the proposed project site, new reservoir configurations and designs were explored, of which four were considered to be reasonable alternatives (i.e., no fatal flaws from a technical or environmental perspective). The T2A Alternative, TEA Jacking/Tunneling Alternative, TEA Trenching Alternative, TEA Overchute Alternative, Enlarged Afterbay Alternative, and a No Project Alternative were carried forward for the environmental analysis.

As discussed in detail in Section 4.3, Analysis of Reasonable Alternatives, biological impacts associated with the T2A Alternative, TEA Jacking/Tunneling Alternative, TEA Trenching Alternative, TEA Overchute Alternative, and the Enlarged Afterbay Alternative would be substantially less than the proposed project. The TEA Trenching Alternative would cause only temporary impacts to the existing natural drainage channel located east of Cottonwood Chutes, which has been identified as burrowing owl habitat. However, the T2A Alternative, TEA Jacking/Tunneling Alternative, TEA Overchute Alternative, Enlarged Afterbay Alternative, and the No Project Alternative would completely avoid this drainage channel and the associated impacts to burrowing owl habitat and coast horned lizard habitat within the drainage channel. Additionally, the habitat in the area of the T2A Alternative is of lesser quality and fewer acres would be impacted than the proposed project or other alternatives. However, the drawbacks to the T2A Alternative include more complex operations and the need for a future installation of a penstock connection to Alamo Powerplant to meet the same operational flexibility as the proposed project. For the No Project Alternative, no construction related to a new afterbay facility would be required and current operations would be maintained. Thus, the No Project Alternative would result in no environmental impacts, but would also meet none of the project objectives. A complete description of these alternatives and a determination of the environmentally superior alternative per State CEQA Guidelines Section 15126.6(e)(2) are provided in Section 4, Alternatives Analysis.

ES.6 Summary of Impacts and Mitigation Measures

The impacts that would result from implementation of the proposed project are summarized in Table ES-1. The impacts identified in Table ES-1 correspond to those contained in the impacts analysis presented in Section 3, Environmental Analysis, and those presented in Section 5.5, Effects Not Found to be Significant, of this EIR. Also listed are the mitigation measures proposed to reduce significant impacts as much as feasibly possible (Air Quality and Biological Resources), or to less-than-significant levels (Aesthetics, Geology and Soils, Noise, and Transportation and Traffic).

The following system is used to classify the significance of impacts:

- **Class I: Significant Unavoidable Impact.** Class I impacts are significant adverse effects that cannot be mitigated to below a level of significance through the application of feasible mitigation measures. Class I impacts are significant and unavoidable.

- **Class II: Significant but Mitigable Impact.** A Class II impact is a significant adverse effect that can be reduced to a less-than-significant level through the implementation of mitigation measures presented in the EIR and/or the Initial Study.
- **Class III: Less-than-significant Impact.** A Class III impact is a minor change or effect on the environment caused by the proposed project that does not meet or exceed the criteria established to gauge significance. Less than significant impacts do not require mitigation.
- **Class IV: Beneficial Impact.** Class IV impacts represent beneficial effects that would result from project implementation.

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
Air Quality		
Construction emissions would exceed the emission thresholds, and would therefore cause a short-term impact to local air quality conditions.	I	<p>AQ-1 CDWR shall develop a Fugitive Dust Emission Control Plan (FDECP). Measures to be incorporated into the plan include, but are not limited to the following:</p> <ul style="list-style-type: none"> • Water active construction sites at least three times per day, except during periods of rainfall or those areas that have been temporarily covered, have vegetative ground cover, or have had chemical stabilization applied according to the FDECP. • Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturer's specifications to exposed piles (i.e., gravel, dirt and sand) with a five percent or greater silt content. • Increase the frequency of watering, or implement other additional fugitive dust mitigation measures, to all disturbed fugitive dust emission sources when wind speeds (as instantaneous wind gusts) exceed 25 miles per hour (mph). Operations causing significant fugitive dust (i.e. grading and other earthmoving operations) shall be suspended when winds carry visible dust plumes beyond the property line despite implementation of all feasible dust control measures. • Apply water three times daily, except during periods of rainfall, to all unpaved road surfaces. • Topsoil stockpiled for more than two days shall be covered, kept moist and/or treated with soil binders to prevent dust generation. Although keeping the stockpile moist can prevent dust generation, it may not provide protection from water erosion and therefore additional protection measures may be necessary (see BIO-2). • Topsoil stockpiled for more than one year shall be planted and watered to sustain biological components as well as prevent dust emissions (see BIO-2). • Maintain on-site vehicle travel to the lowest practical speeds to reduce fugitive dust emissions. • Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (Whenever possible, use water sweepers with reclaimed water). The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. • All vehicle tires shall be inspected, are to be free of dirt, and washed as necessary prior to entering paved roadways. • Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit the site. • Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station. • Cover all trucks hauling soil and other loose material, or require at least two feet of freeboard. • Establish a vegetative ground cover on unpaved areas within 21 days after active construction operations have ceased. (Ground cover must be of sufficient density to expose less than 50 percent of unstabilized ground within 90 days of planting, and at all times thereafter). • When backfilling during earthmoving operations, dedicate a water truck or large hose to backfilling equipment and operations and apply water as needed; or, cover or enclose stationary backfill material; if needed, mix backfill soil with water prior to moving. Empty loader buckets slowly and minimize their drop heights. Immediately after backfilling, apply soil stabilization compounds to form a crust. • When clearing and grubbing, pre-wet surface soils in the operation area; stabilize surface soil with dust palliative unless construction activities are to immediately take place; and use water or dust palliative to form a crust on soil immediately following clearing/grubbing. • During cut and fill activities, pre-water with sprinklers or wobblers to allow time for penetration; pre-water with water trucks or water pulls to allow time for penetration. • Post a publicly visible sign with the telephone number to contact regarding dust complaints. The construction contractor shall respond and take corrective action with 24 hours. <p>AQ-2 The construction contractor shall ensure that all mechanical equipment associated with project construction is properly tuned and maintained in accordance with the manufacturer's specifications.</p>

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
		AQ-3 Use CARB certified ultra low sulfur diesel (ULSD) fuel containing 15 ppm sulfur or less.
		AQ-4 Restrict diesel engine idle time, to the extent practical, to no more than 10 minutes.
		AQ-5 Schedule all material deliveries to the construction site outside of peak traffic hours, and minimize other truck trips during peak traffic hours.
		AQ-6 The engine size of construction equipment shall be the minimum practical size.
		AQ-7 Apply non-toxic soil binders to on-site access roadways, staging areas, and parking area(s) throughout construction, as necessary to reduce fugitive dust emissions.
The proposed project would be inconsistent with an Air Quality Management Plan.	III	None required.
Operational activities would result in the generation of air pollutants in an area classified as nonattainment for ozone and PM ₁₀ and would therefore cause or contribute to existing air quality violations.	III	None required.
Construction and/or operation of the proposed project would have the potential to contribute to cumulatively significant impacts.	I	AQ-1 through AQ-7 (above).
Construction of the proposed project would expose sensitive receptors to substantial pollutant concentrations	I	AQ-1 through AQ-7 (above).
Construction and/or operation of the proposed project would expose a substantial number of people to objectionable odors.	III	None required.
Biological Resources		
Project construction or operation may affect habitat used by bird species that are federal and/or state species of concern, protected by the Migratory Bird Treaty Act and protected by the California Fish and Game code; sensitive or special status species may be present in the area at the time of construction or during operational activities.	II	BIO-1 The surface of temporarily impacted areas and the surface of the spoil pile(s) shall be seeded with a native seed mix suited to local climatic and soil conditions. Species known to exist at the site based on survey lists provided in Appendix C or from other surveys within the project area shall be preferred in the seed mix. Unlike the temporarily disturbed areas, the objective of revegetating the spoil pile(s) shall not be to reestablish preexisting vegetation conditions, but rather to ensure stability of the surface. The seeding surface shall be prepared by replacement of topsoil, scarification of compacted surfaces and wetting to maximize seed germination. The method of seeding shall be suited to the windy conditions that persist within the project area (i.e., broadcast seeding shall not be used). Temporary irrigation shall be used occasionally to establish plants. In order to facilitate reestablishment of native plant species in the seed mix and already present in the seed bank in the replaced topsoil, nonnative species shall be removed during the first two growing seasons, primarily through manual and other mechanical means in temporarily disturbed areas only (i.e., the spoil piles are excluded from this requirement). Chemical herbicides may be used in small affected areas if manual methods are ineffective. The use of herbicides and pesticides for maintenance purposes on revegetated areas or within the habitat

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
		enhancement area described in BIO-4 below shall be done in a manner consistent with United States Environmental Protection Agency (USEPA) label instructions, the California Department of Food and Agriculture, the Department of Health, and the Department of Industrial Relations.
	BIO-2	Topsoil removed from permanently affected areas shall be temporarily preserved in stockpiles for replacement on the surface of the spoil pile(s) or revegetated areas. The top six inches or the A horizon if it can be determined by visual means shall be segregated as topsoil. Mixing of the topsoil shall be kept to a minimum during stockpiling. As much as possible the height of temporary topsoil stockpile(s) shall be kept to a maximum of five feet as long as there is sufficient space available. Stockpiles shall be formed in rows to avoid or minimize soil compaction. Topsoil stockpiles shall be protected from wind erosion consistent with mitigation measure AQ-1. They shall also be protected from water erosion, compaction, and any other actions that may cause loss, mixing, or other disturbance. Topsoil stockpiled for less than one year shall be stabilized and protected from wind or water erosion by any of the following options: chemical soil stabilizer; vegetated cover of native species or infertile grasses; tarp or other inert material; or watering at the surface. If topsoil must be stockpiled for more than one year, it shall be watered and seeded with native annuals known to exist in the project area or infertile grass seed to ensure the retention of nutrients and to sustain soil micro fauna. Topsoil placed on the surface of the spoil pile(s) shall be compacted to pre-project density and recontoured to ensure stability and continuity with existing topography. Because even the one-year time frame may result in a substantial loss of soil micro fauna, when soil is replaced it shall also be supplemented with live soil inoculum suited to the area. Inoculum may be obtained commercially or locally from adjacent areas depending on such factors as the availability of a local or commercial source, relative disturbance to source areas and the likelihood of success. Topsoil stockpiles shall be periodically inspected, especially during and after precipitation events, to monitor for erosion or soil loss. Areas where erosion or soil loss occurs shall be corrected with measures such as replanting the area with native or infertile vegetative cover; respraying the surface with soil stabilizer; reducing the height of the stockpile (if more than five feet in height); and/or reducing the slope of the stockpile surface. Corrective actions shall be implemented prior to the next rain event, but no more than seven working days after discovery of erosion or soil losses.
	BIO-3	The disturbance or removal of vegetation within the project and construction footprint shall not exceed the minimum reasonably necessary to complete operations. Precautions to avoid damage to non-target vegetation by people or equipment shall include, but not be limited to the following: flagged construction area limits, strict adherence to established access roads by trucks and construction equipment, and minimized turning areas.
	BIO-4	The CDWR shall develop and implement a Habitat Enhancement Plan for an acreage equivalent to 1.1 acres for every acre of habitat permanently affected by the project (i.e., 215.5 acres). The enhancement area shall be located approximately southwest of the proposed Tehachapi East Afterbay project site incorporating part of the Oso Creek drainage. The goal of the Plan shall be to improve habitat resources similar to those that will be lost at the proposed project site. Some of the measures that shall be considered include installation of owl boxes or burrows, establishment of woody species or other plant species suited to existing hydrological conditions along the Oso Creek drainage, restoration of soil flora and fauna, reestablishment of hydrological connections, and control of exotics. Species known to already exist at the site based on survey lists provided in Appendix C or from other surveys within the project area shall be preferred in any revegetation effort. The Plan shall also consider

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
		the feasibility and effectiveness of transplanting plants or collection of seed from plants that will be impacted by the project footprint. The Plan shall provide measures to address incidental disturbance or impacts caused by implementation of any of the enhancement measures identified in the Plan. The Plan shall also incorporate mitigation measures BIO-14 and BIO-15 as well as other measures to improve habitat quality within the enhancement area. The Plan shall be submitted to the California Department of Fish and Game (CDFG) for their review.
	BIO-5	<p>Pre-construction bird surveys shall be conducted to identify the presence of breeding pairs or active nests of special status bird species, species protected by the Migratory Bird Treaty Act (MBTA), or species protected by the California Fish and Game Code, within the project and construction footprint plus an additional buffer distance of 500 feet. The surveyed area, including the 500 foot buffer, shall also include existing and newly proposed access roads to the project site. Existing roads need to be included in the survey because of the anticipated increase in traffic disturbance and because portions of some existing roads are overgrown with vegetation. In the event that surveys indicate habitat occupied by breeding pairs or active nests of special status bird species, species protected by the MBTA, or species protected by the California Fish and Game code within 500 feet of the project or construction footprint, some or all of the following measures shall be implemented:</p> <ul style="list-style-type: none"> • The occupied area plus an additional no disturbance zone will be flagged and/or fenced until a qualified biologist has determined that all young have fledged. The size of the no disturbance zone shall be determined in consultation with the CDFG and/or the United States Fish and Wildlife Service (USFWS). • Clearing and grubbing of vegetation shall be conducted during the months prior to March 1 and after July 30. CDWR shall consult with CDFG and USFWS when work schedules conflict with this general guideline and impacts to nesting birds protected under the MBTA or the California Fish and Game Code are imminent. • Where ambient noise levels are less than 60 dBA and it is determined that construction related noise will cause noise levels to exceed 60 dBA, or where the ambient noise levels are greater than 60 dBA and it is determined that construction related noise will cause noise levels to exceed the ambient level by 5 dBA, a temporary sound wall shall be constructed between the sensitive area and the construction related noise source. Monitoring shall be conducted at 50 feet and 100 feet from the sound wall or at the boundary of the sensitive habitat if the habitat is more than 100 feet from the construction site. This measure would be applicable to survey areas that yield positive results and would be limited to the breeding and nesting season for the sensitive bird species identified in the surveys. • Night lighting shall be carefully aimed, shielded and of the minimum reasonably necessary intensity to reduce illumination spillover from work areas that may impact migratory birds or plants and animals, in general. • If an active bird nest will be affected by construction activities within 500 feet of the nest, work shall be temporarily suspended within an appropriate buffer area as designated by the CDWR Mitigation Monitor.
	BIO-6	<p>Prior to construction, potentially suitable burrowing owl burrows present within 500 feet of the construction area and all access roads shall be surveyed by a burrowing owl expert to determine whether they are occupied. Unoccupied burrows shall be blocked to prevent occupation by burrowing owl using established CDFG methods and protocols. The CDFG shall be notified of any occupied burrows and these shall be monitored to determine their nesting status. No burrows with active nests shall be disturbed until a qualified biologist has determined that all birds have fledged.</p>
	BIO-7	<p>A no-disturbance zone for burrowing owl shall be established within the unnamed drainage north of the project</p>

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
		site. The no-disturbance zone shall extend 500 feet beyond the area where evidence of burrowing owl activity was identified (Figure 3-9). Although removed from the construction and project footprint or access routes, the no-disturbance zone will be established to reduce the risk of unnecessary or mistaken trespassing during construction. The zone shall be flagged in the field and identified in sensitive resource information provided to all construction workers (see BIO-9).
	BIO-8	To reduce wildlife deaths from accidental falls into excavated areas, all deep or steep-walled excavated areas shall be covered, provided with wildlife escape ramps or surrounded by an approved exclusionary fence. The temporary fence shall be hardware cloth or of similar materials that are approved for use by USFWS and CDFG. All excavated areas shall be inspected daily, and the CDWR Mitigation Monitor shall be notified immediately for the removal of any trapped wildlife. To further protect wildlife, all food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited. It shall be prohibited to bring pets or hunt on the construction site.
	BIO-9	A training program shall be implemented so that among other things, workers can visually recognize special status species that may be present on the project site, identify the location of no disturbance zones, and adequately understand and implement biological mitigation measures.
Project construction is likely to affect the coast horned lizard and its habitat; mitigation measures that can feasibly be implemented will not be completely successful in avoiding a loss of individuals and their habitat.	I	<p>BIO-1 through BIO-4, BIO-8 and BIO-9 (above).</p> <p>BIO-10 Focused surveys for the coast horned lizard shall be conducted within the unnamed drainage and the alluvial floodplain to the east, south of spoil pile #1, that present suitable habitat conditions for the lizard and that may be temporarily disturbed during construction and permanently affected by the bypass, access roads and rock slope protection. Surveys shall be conducted in September/October 2004 when the species is more active prior to winter hibernation. The surveys shall be conducted using established protocols to maximize the likelihood of observing the species, and shall rely on a combination of several walking surveys at times of the day when coast horned lizards are most active and scat surveys to indirectly estimate population size. The objective of the surveys is to estimate the extent of occupied habitat that overlaps with temporarily and permanently impacted areas. The estimated occupied area will be delineated on a map, flagged in the field and made available to all project personnel. This measure shall be planned and implemented in coordination with CDFG.</p> <p>BIO-11 The Oso Creek Drainage within the area that will be acquired to compensate for permanent impacts will also be surveyed according to the method described in BIO-10. A habitat assessment will be completed to determine if the site may be enhanced to improve suitable coast horned lizard habitat, and to potentially relocate coast horned lizards found during project construction. Potential enhancement measures that can be implemented in the compensation acreage, such as improving ground cover for the species, will be incorporated into the Habitat Enhancement Plan described in BIO-4.</p> <p>BIO-12 Despite the fact that exclusion, capture and relocation measures typically implemented to reduce impacts to coast horned lizards would be relatively ineffective during the winter months when the initial ground disturbance will occur, CDWR will consult with the CDFG to determine if such measures may still be implemented in such a way as to have a partial effect on reducing impacts to coast horned lizards. In addition, a Biological Monitor(s) will</p>

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
		be present to capture coast horned lizards that are disturbed from their habitat and that are at risk during the initial ground disturbance. A protocol will be established in coordination with CDFG prior to ground disturbance to define the method of capture, handling and relocation of any coast horned lizards. Surveys defined in BIO-9 and BIO-10 will assist in establishing whether suitable relocation habitat may exist within the enhancement area defined in BIO-4.
Project operation will affect sensitive species and their habitat.	II	BIO-13 Fine-mesh or metal exclusion fence shall be added to the bottom 18 inches of the reservoir fence to reduce entry of small mammals and reptiles.
Project construction will affect segments of the unnamed drainage and Oso Creek, which are under the jurisdiction of the California Department of Fish and Game.	II	<p>BIO-14 Any trees with a diameter at breast height (dbh) of two inches or greater that are damaged or removed as a result of the project shall be replaced at a ratio of 3:1. The number, species, approximate age, and size of the affected trees shall be determined prior to clearing and grubbing. The CDWR shall replace the trees according to the conditions defined by the CDFG in the Streambed Alteration Agreement.</p> <p>BIO-15 Replaced trees shall be monitored for five years to ensure an 80 percent success rate. Trees shall survive without irrigation for at least the final two years of the monitoring period. Trees shall be replanted if the success criterion is not attained either through the originally planted trees or through natural recruitment. In addition to the criteria defined in this measure, CDWR shall follow other criteria tree replacement and monitoring as defined by CDFG in the conditions of the Streambed Alteration Agreement.</p> <p>BIO-16 Temporary improvements that may be needed for the southern project access where it across Oso Creek shall be done while the drainage is dry. Because this is an ephemeral drainage, it is feasible to carry out any improvements while the drainage is dry without the need to divert flows. Vehicles shall not be driven or equipment operated in water-covered portions of a stream or where riparian vegetation or aquatic organisms may be destroyed. The CDFG shall be consulted when construction activities can not avoid water diversion.</p> <p>BIO-17 Improvements to or construction of the bypass culvert or access roads crossing either the unnamed drainage or Oso Creek drainage shall be maintained such that they do not constitute a barrier to downstream surface flow, or the upstream or downstream movement of aquatic or terrestrial life, or cause an avoidance reaction that impedes their upstream or downstream movement.</p> <p>BIO-18 If there is any temporary alteration to the low-flow channel or the bed and bank of either the unnamed drainage or Oso Creek drainage these shall be returned as closely as possible to their original topography, configuration and width, without creating future erosion problems. Re-contoured slopes and all other cleared areas shall be stabilized to prevent erosion.</p>
The project would not Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.	III	None required.

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures
Aesthetics		
Operation of the East Afterbay would require exterior lighting during nighttime hours, which would impact current and future residences in the area.	II	AES-1 The construction contractor shall install exterior lighting with shielding sufficient to reduce glare to no more than five feet from the subject property line. Security lighting shall have low wattage and prismatic glass coverings to minimize any potential light and glare impacts.
Geology and Soils		
The project may result in substantial erosion.	II	AQ-1 (above) GEO-1 To reduce erosion at the project site, temporary and permanent cut and fill slopes shall be planted with fast growing native vegetative cover. GEO-2 To reduce erosion at the project site, slopes exposing weak or loose materials shall be protected with jute netting or similar material until vegetation becomes established. GEO-3 During construction, the contractor shall ensure that the length of time that soils are exposed is minimized to the maximum extent feasible to reduce potential erosion impacts. GEO-4 During site preparation activities (i.e., site clearing and leveling), the contractor shall apply water to cleared and exposed soils, as necessary, to prevent excessive wind erosion.
Landslides, lateral spreading, subsidence, or liquefaction could occur if measures are not taken to stabilize slopes located within the reservoir area.	II	GEO-5 To improve slope stability, the following measures shall be implemented: <ul style="list-style-type: none"> • The top of all permanent and temporary cuts shall be rounded to blend with the natural topography. • Slope stabilization measures such as flattening, removal of loose soil, or buttressing with compacted fill, are recommended depending on actual site conditions. • Engineered (compacted and sloped to drain) spoil fills shall have slopes no steeper than 2:1 (horizontal to vertical). Benching may be required on spoil fill slopes higher than 30 feet depending on the type of material wasted. • Scaling of loose material shall be performed as excavation activities proceed. • During construction, an on-site geologist or engineer shall observe the excavations and map the exposed soil conditions, and check the adequacy of the foundation and depth and extent of excavations for the construction of fills and the stability of cut slopes. • If there are changes in the concept or design of the project, an engineer shall review those changes to check that the conclusions and recommendations of the various geologic studies performed for the project area remain valid. • Prior to grading, an engineer shall review the final plans and specifications for conformance with the intent of the recommendations provided in the various geologic studies performed for the project area.

Table ES-1. Summary of Impacts and Mitigation Measures Identified in the EIR

Impact	Class	Mitigation Measures	
		Noise	
Noise levels from construction-related off-site traffic and on-site construction equipment would be potentially adverse to local residences.	II	AQ-2 (above)	
		NOI-1	CDWR or its construction contractor shall limit off-site trucking activities (e.g. deliveries, export of materials, etc.) to the hours of 6:00 a.m. to 10:00 p.m. to minimize impacts to nearby residences.
		NOI-2	In the event of complaints by nearby residents due to nighttime construction activities, the construction contractor shall monitor noise levels. Noise shall be measured at the property line of nearby residential uses. In the event that construction noise exceeds the applicable limits specified in the Noise Element of the Kern County General Plan [e.g., L ₅₀ (night) 40 dBA for rural residential], the responsible construction activity shall cease until feasible measures, such as temporary sound walls, are implemented to reduce nighttime noise levels. Nighttime noise thresholds shall be included in the construction contractor's contract with CDWR.
		NOI-3	To the extent feasible, the construction contractor shall locate, store, and maintain portable and stationary equipment as far as possible from nearby residents.
Noise from intermittent maintenance activities, including regular civil maintenance and preventative maintenance, involving large construction-related equipment would be potentially adverse	II	AQ-2 and NOI-1 through NOI-3 (above), as applicable.	
		Transportation and Traffic	
Temporary disruption of traffic flows during construction, including lane blockages and temporary street closures.	II	TRA-1	CDWR shall develop and implement a detailed Traffic Control Plan (TCP), prepared by a registered Traffic Engineer. The TCP shall define the location of any roadway closures, traffic detours, haul routes, and hours of operation in accordance with professional engineering standards. The TCP shall also define the use of flaggers, warning signs, lights, barricades, cones, etc. according to standard guidelines outlined in the Caltrans Traffic Manual and the Work Area Traffic Control Handbook (WATCH).
		TRA-2	Damage, due to construction traffic on SR-138 and the local roadways between SR-138 and the project site, shall be repaired upon completion of on-site construction activities.